Satellite Data Ingest and Processing System

Antenna receiving geostationary satellite data

FUNCTION: Collects and processes a unique global digital data set from multiple satellite sensors. The facility enables researchers to rapidly collocate multiple satellite sensors/channels for a wide range of METOC applications anywhere on the globe. Hardware/software compatibility with the Fleet enhances rapid prototyping and transition to operations.

INSTRUMENTATION: The facility includes two geostationary receiving systems to capture real-time GOES-West and GOES-East data. A polar orbiter antenna system collects data from NOAA and Defense Meteorological Satellite Program (DMSP) satellites. A suite of Unix workstations and software process these data streams and data from three other geostationary and four global polar orbiter satellite data sets. Collaborative agreements with other government agencies significantly reduce onsite infrastructure needs.

DESCRIPTION: The facility includes rooftop antennas to capture real-time GOES-West and GOES-East digital data. The ~30 GB/day data rate flows through hardware to frame and bit-sync the data located in the computer room. Digital data from three other geostationary satellites (GMS-5, Meteosat-7&5) are gathered from the Fleet Numerical Meteorology and Oceanography Center (FNMOC). The five geostationary satellites thus enable true global coverage with visible, infrared and water vapor channel data using SeaSpace's TeraScan software.

Real-time DMSP and NOAA polar orbiter satellite data are captured via a SMQ-11 system. NOAA data are available from a similar system in Norfolk, VA. Global near real-time DMSP polar orbiter data are also gathered via FNMOC. Near real-time Tropical Rainfall Measuring Mission (TRMM) polar orbiter data are collected from the NASA Goddard Space Flight Center.

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Meteorological Computing and Archival Facility

Tape library of the Bergen Data Center

FUNCTION: Provides a data archival facility, the Bergen Data Center (BDC), for meteorological and oceanographic data. It also operates as a resource site for the Master Environmental Library (MEL), a distributed repository system of environmental information with a single user access site.

INSTRUMENTATION: The facility includes a SGI server, two Sun servers, and StorageTek tape libraries handling archives and backup for BDC. BDC storage capacity is 31 TB. Veritas Hierarchical Storage Manager (HSM), Netbackup, and First Watch software packages are used to manage data storage.

DESCRIPTION: The MEL facilitates discovery, access, subscription, and delivery of environmental information, products, and data wherever they are stored. It supports models and simulations for training, analysis, and acquisition through a single user interface to numerous DoD and non-DoD Resource Sites. MEL promotes interoperability among simulation users by facilitating reuse of environmental information, products, and data. MEL supports the warfighter as well as the non-DoD and commercial communities. At the BDC, data older than 30 days are physically archived within the HSM file systems but can also be retrieved logically on-line.

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John B. Hovermale Modeling, Database, and Visualization Laboratory

Visualization display and recording device

FUNCTION: Provides computer facilities and expertise to support on-scene numerical weather predictions including access to operational Navy databases and state-of-the art visualization tools. This unique laboratory is sponsor-funded and provides support to NRL and other DoD researchers supported by ONR or SPAWAR.

INSTRUMENTATION: Silicon Graphics Inc., Sun, Hewlett-Packard, and Windows NT servers with live, global METOC data feed from Fleet Numerical Meteorology and Oceanography Center and other sources.

DESCRIPTION: This laboratory provides efficient access to unclassified and classified networks, databases, and computational resources. Access to these assets aids in the development, integration, and testing of a wide range of end-user applications including on-scene numerical weather prediction models, tactical environmental data servers, atmospheric analysis and nowcast systems, visualization applications and briefing tools, and web-based data and product dissemination capabilities. In addition to providing hardware resources and data for research projects and demonstrations, dedicated technical experts provide code examples and database consulting to on-site and off-site developers. A key to successfully demonstrating new and innovative capabilities to users and to sponsors is end-to-end data connectivity.

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